CLAIMS

1. A strategic-response control system for operation of an air conditioning system in an environment with increased power rates during a designated peak period, the air conditioning system including a power board for alternately operating the air conditioning system in an operating state and an "off" state, the control system comprising:

a controller having a processor and a real time clock for coordinating operations of the processor with the timing of the designated peak period;

an indoor temperature sensor electronically connected to the controller unit for generating an input signal to the processor representing the indoor temperature;

an outdoor temperature sensor electronically connected to the controller unit for generating an input signal to the processor representing the outdoor temperature; and,

an operating program having operating parameters including a maximum comfort level temperature, a minimum comfort level temperature and a warmup rate for the environment in which the air conditioner operates, and, having a processing procedure for determining a time period for precooling the environment before the peak period begins;

wherein on activation, the processor determines a time period of precooling the environment before the peak period begins and signals the power board at the determined times to enter an operating state

for precooling and an "off" state at the beginning of the peak period.

2. The strategic-response control system of Claim 1 wherein the air conditioning system has an operating state with multiple power levels of operation including a low power level of operation, and the processing procedure includes a process for determining if the maximum comfort level will be exceeded during the peak period in the off state of operation and determining a time period for low power level of operation during the peak period to prevent the environment from exceeding the maximum comfort level, and, signaling the power board at the determined time to enter a low power level of operation.

3. The strategic-response control system of Claim 1 wherein the operating program includes an algorithm for calculating the warmup rate for the environment for a particular indoor temperature and an outdoor temperature.

4. The strategic-response control system of Claim 1 wherein the controller includes an updatable memory and a look-up table for recording and retrieving data on indoor temperature, outdoor temperature and warmup rates wherein cooling time constants can be determined for determining cooling rates at particular indoor and outdoor temperatures.

5. The strategic-response control system of Claim 4 wherein the air conditioning system has multiple power levels of operation and the look-up

table has data for determining warmup rates and cooling rates at each power level of operation.

6. The strategic-response control system of Claim 1 wherein the air conditioning system includes an air conditioner with a compressor having a compressor fan and an evaporator having an evaporator fan, the control system further comprising an adjustable fan speed control that controls the compressor fan and an adjustable fan speed control controls the evaporator fan.

7. The strategic-response control system of Claim 6 wherein the air conditioning system has multiple power levels of operation and the operating program has a processing procedure for determining the most efficient fan speed for optimizing cost savings at each power level of operation of the air conditioning system.

8. The strategic-response control system of Claim 1 wherein the air conditioning system has a normal mode under thermostatic control and the strategic-response control system is activated to override the thermostatic control by the user of the environment.

9. The strategic-response control system of Claim 8 wherein the strategic-response control system is alternately activated remotely by a power utility.

10. The strategic-response control system of Claim 2 wherein the control

system further comprises a humidity sensor electronically connected to the controller unit for generating an input signal to the processor representing an outdoor humidity level and the operating program has a procedure for adjusting the operating parameters in response to the outdoor humidity level.

11. A method for strategically controlling an air conditioning system in an environment with increased power rates during a designated peak period that is alternately operated in an operating state and an "off" state by the steps of:

(1) designating a minimum comfort level temperature in the environment;

(2) precooling the environment to a temperature no less than the designated comfort level temperature before the beginning of the designated peak period by operating the air conditioning system in the operating state; and,

(3) operating the air conditioning system in the "off" state after the peak period begins.

12. The method for strategically controlling an air conditioning system of Claim 11 wherein the operating state of the air conditioning system has multiple power levels including a low power level by the further steps of:

(1) designating a maximum comfort level temperature in the environment;

(2) determining if the maximum comfort level temperature will be

exceeded in the peak period by operating the air conditioning system in the "off" state during the peak period; and,

(3) operating the air conditioning system in the low power level for at least a part of the peak period.

13. The method for strategically controlling an air conditioning system of Claim 12 by the further step of:

(1) determining the period of time the air conditioning system is to be operated at the low power level of operation to maintain the temperature in the environment below the maximum comfort level temperature during the peak period; and,

(2) operating the air conditioning system at the low power level of operation for the determined period of time during the peak period.

14. The method for strategically controlling an air conditioning system of Claim 13 wherein the step of determining the period of time the air conditioning system is to be operated at the low power level includes the steps of:

(1) sensing the indoor temperature;

(2) sensing the outdoor temperature;

(3) determining the warmup rate for the environment at the sensed indoor temperature and outdoor temperature; and,

(4) calculating the time period for cooling at the low power level to prevent the environment from reaching the maximum comfort level temperature before the end of the peak period.

15. The method for strategically controlling an air conditioning system of Claim 14 wherein the air conditioning system has at least three levels of operation and the additional step of:

(1) determining if the calculated time period for cooling at the low power level exceeds the time remaining in the peak period at the time of the calculation;

(2) if the calculated time period for cooling at the low power level does exceed the time remaining in the peak period, then determining the period of time the air conditioning system is to be operated at the next power level above the low power level;

(3) operating the air conditioning system at the next power level above the low power level for the determined period of time during the peak period.

16. The method for strategically controlling an air conditioning system of Claim 14 wherein the step of determining the period of time the air conditioning system is to be operated at the low power level is repeated periodically before and during the peak period.

17. The method for strategically controlling an air conditioning system of Claim 14 wherein the step of determining the period of time the air conditioning system is to be operated at the low power level includes the further steps of:

(1) sensing the outdoor humidity level,

(2) adjusting the maximum comfort level temperature if the outdoor

humidity level exceeds a predetermined level.

18. The method for strategically controlling an air conditioning system of Claim 12 wherein the air conditioning system includes a compressor with a compressor fan and an evaporator with an evaporator fan with a speed control for the compressor fan and the evaporator fan, including the added steps of:

(1) determining the optimum operating speeds of the compressor fan and evaporator fan for each of the multiple power levels of operating; and,

(2) operating the compressor fan and evaporator fan at the optimum operating speed for each power level of operating the air conditioning system.

19. The method for strategically controlling an air conditioning system of Claim 11 wherein the air conditioning system is operated in a normal mode under conventional thermostatic mode and is operated in a strategically controlled method when pre-set by a user of the environment.

20. The method for strategically controlling an air conditioning system of Claim 11 wherein the air conditioning system is operated in a normal mode under conventional thermostatic mode and is operated in a strategically controlled method when remotely activated by a utility.